Table S5. 10Be boulder ages using a variety of production rates and models. The results shown in red are those discussed in the text and used in the Matthews Ranch (Pitman Canyon) slip rate calculations.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Produc-tion rate | Local (Sierra Nevada): 3.83 +/-0.15 at/g/yr | Local (Sierra Nevada): 3.83 +/-0.15 at/g/yr | Worldwide: 4.07 +/-0.20 at/g/yr | Worldwide: 3.99 +/-0.23 at/g/yr |
| Model | Lal (1991)/Stone (2000) | Lifton et al. (2014) | Lal (1991)/Stone (2000) | Lifton et al. (2014) |
| **Sample** | **Scaling Factor** | **Age(ka)** | **1σ (ka)** | **1σ without PR error** | **Scaling Factor** | **Age(ka)** | **1σ (ka)** | **1σ without PR error** | **Scaling Factor** | **Age(ka)** | **1σ (ka)** | **1σ without PR error** | **Scaling Factor** | **Age(ka)** | **1σ (ka)** | **1σ without PR error** |
| **mr1** | **1.9** | **9.04** | **0.81** | **0.72** | 1.7 | 10.37 | 0.96 | 0.85 | 1.9 | 8.72 | 0.81 | 0.69 | 1.7 | 9.92 | 1.03 | 0.83 |
| **mr2** | **2.05** | **44.98** | **2.4** | **1.69** | 1.89 | 49.99 | 3 | 2.13 | 2.04 | 43.52 | 2.53 | 1.55 | 1.9 | 47.79 | 3.45 | 1.99 |
| **mr3** | **2.03** | **65.56** | **4.86** | **4.16** | 1.88 | 72.94 | 5.73 | 4.93 | 2.03 | 63.38 | 5.02 | 3.97 | 1.88 | 69.88 | 6.07 | 4.62 |
| **mr4** | **2.04** | **47.46** | **2.43** | **1.52** | 1.88 | 53.04 | 2.84 | 1.79 | 2.05 | 45.76 | 2.63 | 1.4 | 1.89 | 50.65 | 3.57 | 1.73 |
| **mr5** | **2** | **34.48** | **3.82** | **3.62** | 1.86 | 37.99 | 3.95 | 3.75 | 1.99 | 33.39 | 3.82 | 3.51 | 1.85 | 36.65 | 4.06 | 3.65 |
| **mr6** | **2.05** | **43.69** | **2.29** | **1.64** | 1.9 | 48.33 | 2.91 | 2.12 | 2.04 | 42.31 | 2.43 | 1.54 | 1.91 | 46.22 | 3.24 | 1.91 |
| **BC1** | **1.41** | **32.72** | **1.72** | **1.25** | 1.28 | 37 | 1.81 | 1.32 | 1.41 | 31.66 | 1.89 | 1.21 | 1.28 | 35.69 | 2.16 | 1.26 |
| **BC2** | **1.39** | **28.45** | **1.38** | **0.91** | 1.25 | 32.48 | 1.5 | 1 | 1.39 | 27.53 | 1.53 | 0.88 | 1.25 | 31.29 | 1.86 | 0.98 |
| **BC3** | **1.39** | **30.01** | **1.32** | **0.74** | 1.26 | 34.17 | 1.39 | 0.78 | 1.39 | 29.03 | 1.51 | 0.71 | 1.25 | 32.94 | 1.82 | 0.77 |
| **BC5** | **1.34** | **16.07** | **0.88** | **0.66** | 1.17 | 18.88 | 0.94 | 0.7 | 1.34 | 15.54 | 0.96 | 0.63 | 1.16 | 18.2 | 1.16 | 0.7 |
| **BC6** | **1.37** | **21.74** | **1** | **0.63** | 1.22 | 25.09 | 1.1 | 0.7 | 1.37 | 21.05 | 1.1 | 0.6 | 1.21 | 24.19 | 1.4 | 0.68 |
| **BC7** | **1.32** | **11.38** | **0.67** | **0.49** | 1.14 | 13.5 | 0.77 | 0.59 | 1.32 | 10.99 | 0.73 | 0.49 | 1.14 | 12.95 | 0.92 | 0.57 |
| **BC8** | **1.45** | **41.7** | **1.74** | **0.93** | 1.32 | 46.92 | 2.23 | 1.24 | 1.45 | 40.4 | 2.01 | 0.9 | 1.33 | 44.99 | 2.68 | 1.06 |
| **BC9** | **1.35** | **17.36** | **1.09** | **0.88** | 1.19 | 20.17 | 1.09 | 0.88 | 1.35 | 16.79 | 1.16 | 0.86 | 1.19 | 19.51 | 1.28 | 0.86 |
| **BC10-top** | **1.36** | **19.57** | **0.86** | **0.52** | 1.22 | 22.53 | 1 | 0.62 | 1.36 | 18.96 | 0.99 | 0.52 | 1.21 | 21.72 | 1.21 | 0.57 |
| All models use ERA40 atmospheric model and LSD geomagnetic database. |
| Local production rate model uses average of rates at four sites in the Sierra Nevada (Baboon Lakes Moraine, Mount Starr, Greenstone Lake, and Twin Lakes; Martin et al., 2017).  |